APPROVED

Terms of Reference

Water Management Plan

for

Lesser Slave Lake and Lesser Slave River Basins

Phase I

Alberta Environment
Northern Region

July 2003

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Statement of Approval

The terms of reference for Phase One of the Water Management Plan for the Lesser Slave Lake and River Basins has been reviewed by Alberta Environment, the Government Coordinating Committee, stakeholders and the public.

The terms of reference meet the criteria set out for water management planning in the *Framework for Water Management Planning* as identified under the *Water Act*, are in line with the direction set out in the draft provincial Water Strategy, and will be used to develop an approved water management plan under the *Water Act*.

The terms of reference are approved by Alberta Environment's Regional Environmental Manager, Northern Region.

Mike Boyd, Manager, Regional Environmental Manager, Northern Region

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1.0 INTRODUCTION

Lesser Slave Lake is the third largest lake in the province, a provincial tourist destination and a recognized biologically significant area for bird life. The Lesser Slave Lake and River basins are part of the Athabasca River system, which join with the Peace River in NE Alberta to flow to the Arctic Ocean. They are a source of water for agriculture, forestry, oil and gas, commercial fishing, recreation/tourism, domestic and municipal users.

Within the lake basin, these activities often create conflicting interests and demands for different lake levels. Within the river basin, seasonally low flows can affect aquatic life and municipal and industrial withdrawal and dilution uses of the river. In addition, settlement and development in the area resulted in many changes, including channelizing portions of the East Prairie and West Prairie Rivers and constructing dikes in the Buffalo Bay–Horse Lakes area to reduce farmland flooding. Also, river cut-offs and a weir were constructed in the upper reach of the Lesser Slave River to manage lake levels and decrease flood impacts. In winter 1999, due to very low lake levels, Lesser Slave Lake outlet channel was dredged to ensure the Town of Slave Lake's water supply; water was also siphoned from the lake into the river to supplement low flows for industrial effluent dilution.

Issues associated with the extremes of localized flooding in 1996, to drought conditions in 1999 and 2000, crystallized regional concerns and made water management planning a priority in the region. Since Alberta Environment has regulatory responsibility for allocating water and protecting the aquatic environment (*Water Act*), and for controlling wastewater releases into the environment (*Environmental Protection and Enhancement Act*), a water management plan is proposed for the Lesser Slave Lake and River basins. The plan will strive to balance environmental, community and economic issues with government policy for the protection and management of water resources.

This is the terms of reference for Phase I of the multi-phase Lesser Slave Lake and River Basin (collectively referred to as the Lesser Slave Basins, or LSB) water management plan (see Fig. 1. Lesser Slave Lake Basin and Lesser Slave River Basins Planning Area). This phase is to be completed in January 2005. Subsequent phases of the water management plan will have separate terms of reference.

1.1 Background

Water level data has been collected for Lesser Slave Lake since 1916. The lake basin has a history of water management concerns, mainly relating to periodic flooding of agricultural lands in low-lying areas surrounding the lake and residential areas in the Town of Slave Lake. Studies in the 1960s and 70s reviewed the technical and economic feasibility of lowering water levels. During the public review associated with these projects, concerns were also expressed about low lake elevations affecting recreation opportunities. In July 1977, the government announced it would proceed with the Lesser Slave Lake Regulation Project consisting of a weir and fish ladder, and seven river cut-offs being constructed in the upper 24 km of the Lesser Slave River. This project lowered the frequency and severity of high lake water levels, raised low lake water levels, lowered the mean lake elevation by 0.3 metres, and reduced overall lake fluctuation by 0.8 metres.

Another area of concern in the lake basin has been the East Prairie and West Prairie Rivers. Historically, these rivers have flooded farmland at the west end of the lake. In the 1960s, the lower reaches of both rivers were channelized to improve flow capacity and reduce flooding of adjacent

lands, but flooding problems persisted in the lower reaches and in the delta areas. In the early 1990s, the Minister of Environment appointed the Horse Lakes-Buffalo Bay Public Advisory Committee (PAC) to review public concerns and make recommendations to address the outstanding issues. Many of the recommendations have been implemented and the remainder are being implemented as budgets allow.

Following several years of low lake water levels, and made worse by drought in 1999, 2000 and 2001, Lesser Slave Lake area residents, municipalities and interested stakeholders met to promote efforts to "sustain Lesser Slave Lake". After several meetings, a local Watershed Committee was established to provide focus for this group. The Watershed Committee has developed a list of issues and is expected to be an active participant in the water management plan for the Lesser Slave Basins. The original stakeholder representation included: Municipal Districts, Towns, Commercial Fishermen, Recreational Cottagers, Recreation (Sport Fishermen), Forest Industry, Agriculture, Tourism Operators, First Nations, Private Landowners, Leaseholders (Crown land), Petroleum and Natural Gas Industry, and Provincial Government (Environment, Sustainable Resource Development, and Community Development – Parks).

1.2 Purpose of Plan, Phase I

The Lesser Slave Basins water management plan will help Alberta Environment make water resource decisions in the Lesser Slave Basins planning area, under the *Water Act* and the *Environmental Protection and Enhancement Act*. Water management issues in the basins will be identified through a consultative process. The resulting plan may also assist local authorities make informed water management decisions and will provide information to the public. The *Framework for Water Management Planning* is used to guide the plan.

Four goals have been identified for Phase I:

- Address the current and foreseeable future water needs in the planning area.
- Address protection of the river aquatic environment.
- Assess whether the Lesser Slave Lake Regulation Project meets current needs.
- Assess the impact of sediment in the Lesser Slave Lake outlet channel.

The objectives required to meet the goals include:

- Determine current water allocation, demand and supply in the planning area.
- Estimate potential future water demand and supply within the planning area.
- Establish the conditions under which flows in the Lesser Slave River are not sufficient to meet current needs.
- Determine a scientific in-stream needs assessment (water quantity, quality, physical habitat and aquatic species [to the extent necessary]) as part of a strategy for addressing protection of the aquatic environment.
- Determine (model) the impact that changing weir configuration would have on lake hydrology and on low-lying lands adjacent to the lake and river.
- Determine the level of sediment in the Lesser Slave Lake outlet channel that affects the function of the weir.
- Facilitate understanding for area residents about water management principles and natural processes affecting water levels.

The outcome of the LSB Water Management Plan, Phase I, will be defining a water conservation objective (WCO)[1] for the Lesser Slave River, and making recommendations to the Director to establish a WCO. Defining a WCO includes assessing the water volume required for human use (including existing consumptive and non-consumptive uses) and the river flow and quality needed to protect the aquatic environment. It may be necessary to compromise between these competing interests – a choice that society makes in the planning process.

Phase II of the water management plan will address sustainability[2] of the lake in terms of water quality, shoreline development, sedimentation and groundwater. As a water management plan, it is outside of the project range to address details of economic development, fisheries management, community health, or other issues that may be of concern to local residents. Additional phases of the water management plan may be identified.

2.0 PLANNING AREA

The planning area is defined by two sub-basins (watersheds), the Lesser Slave Lake sub-basin and Lesser Slave River sub-basin. Combined, they cover about 33,700 sq. km, and consist of seven smaller basins: the South Heart River, East Prairie River, West Prairie River, Driftpile River, Swan River, Saulteaux River, and Driftwood River / Fawcett Lake. Basins that are part of the Athabasca River watershed are not part of the planning area. Lesser Slave Lake is the third largest body of water in the province, at about 1160 sq. km.

The planning area covers seven municipalities, the largest being the M.D. of Big Lakes (55 percent) and the M.D. of Lesser Slave River No. 124 (32 percent). The others are: Woodlands County (six percent), Northern Sunrise County (four percent), and the M.D. of Greenview No. 16, the M.D. of Smoky River No. 130 and the M.D. of Opportunity No. 17 are all involved less than one percent.

3.0 PLANNING and POLICY CONTEXT

The plan follows existing provincial commitments, including *Alberta's Commitment to Sustainable Resource and Environmental Management*, it will meet the requirements of the *Water Act*, and will be guided by the *Framework for Water Management Planning*. As specified in the *Framework*, the plan will account for existing plans and be able to be linked with subsequent regional strategies.

The Alberta Government is currently undertaking a province-wide comprehensive strategy, *Water for Life: Alberta's Strategy for Sustainability*, to identify short-, medium- and long-term plans to effectively manage the quantity and quality of the province's water systems and supply. An action-oriented water management strategy is being developed (Spring-Summer 2003). The initiatives or

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[1] The *Water Act* defines a WCO (Sect. 1(1)(hhh)) as, "…the amount and quality of water… necessary for the:

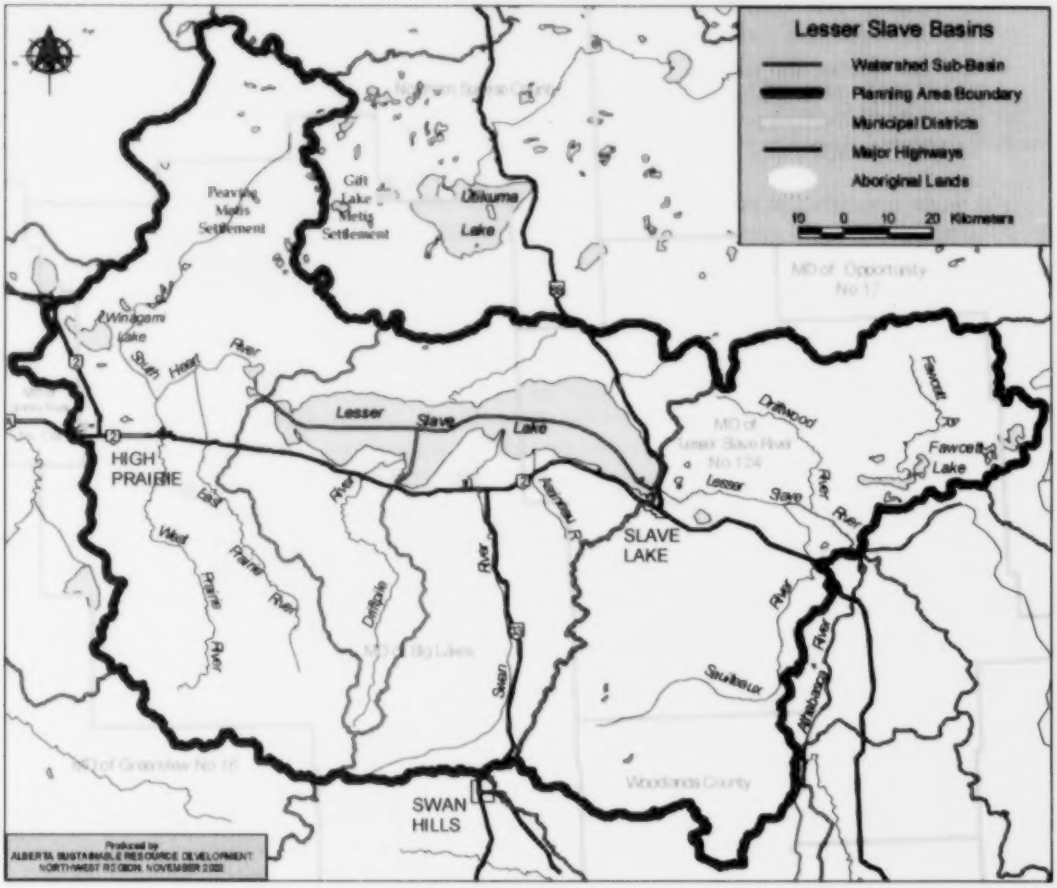
i. protection of a natural water body or its aquatic environment, or any part of them,
ii. protection of tourism, recreational, transportation or waste assimilation uses of water, or
iii. management of fish or wildlife,

and may include water necessary for the rate of flow of water or water level requirements.

[2] Sustainability implies capability to be maintained indefinitely; integrates the environment, the economy and the social system to be maintained perpetually in a healthy state.

direction resulting from the *Water for Life* strategy, when finalized, will be incorporated into the phases of this plan. The LSB water management plan is an example of the watershed planning approach recommended in the *Water for Life* strategy.

Figure 1. Lesser Slave Lake Basin and Lesser Slave River Basins Planning Area



The planning area is controlled, guided or influenced by the following legal and policy documents:

- The *Water Act* (RSA 2000, c. W-3)
- The *Environmental Protection and Enhancement Act* (RSA 2000)
- *Alberta's Commitment to Sustainable Resource and Environmental Management* (1999)
- *The Framework for Water Management Planning* (2001)
- *Buffalo Bay / Horse Lakes East / West Prairie Rivers Water Management Program* (1992)
- The *Public Lands Act* (RSA 2000)
- *Wildlife Act* (RSA 2000)
- Federal *Fisheries Act*
- Federal *Navigable Waters Protection Act*

Agencies responsible for administering this legislation will be contacted and invited to participate in the planning process.

The Watershed Committee has identified the following priority issues on Lesser Slave Lake (Activation Analysis Group Inc. 2001):

- water level, water quality and sedimentation
- economic and commercial responsibility, and
- fish habitat and stocks

but as noted in Section 1.2 Purpose of Plan, water management planning will deal with only the first list item.

The water management planning process is a co-operative (*i.e.*, partnership) initiative between Alberta Environment, other provincial government departments, municipalities, industry, Fisheries and Oceans Canada, aboriginal communities, the public and other stakeholders within the basin boundaries. The terms of reference are prepared in consultation with the stakeholders, ensuring they have the opportunity to be a part of the planning process.

The water management plan follows the principles of integrated resource management, including being open and consultative with regard to those affected by decisions (stakeholders, public), making relevant information available to the public, and having a fair decision-making process. The plan will follow the principles of water management, including: water must be managed sustainably (where the efficient, effective and wise use of water is paramount), water must be managed using an integrated approach with other natural resources, and water must be managed in consultation with the public (see *Framework*, p. 8). As the regulator, the plan remains the responsibility of Alberta Environment to deliver.

3.1 Linkages with Regional Strategies

Regional strategies provide direction for natural resource and environmental management over large areas of the province. Development of the regional strategy in the area affected by this plan is not expected for several years because of priorities in other regions. The LSB Water Management Plan is a sub-regional initiative that will deal with specific water management issues in the lake and river basins. This plan will be considered in the development of the regional strategy when it is developed, and will be reviewed once the regional strategy is complete to ensure both plans are consistent.

3.2 Existing Licenses and Commitments

There are just over 600 licenses issued for surface water withdrawal from the Lesser Slave Lake and River basins (about 500 are licenses for agricultural use of water while the remainder are for uses that include industrial cooling, oilfield injection, wood processing, flood control, aggregate washing, municipal use and irrigation). Under the plan, existing licenses for water withdrawal will be respected. This means water conservation objective determinations will not be imposed on any existing licenses unless there is a provision to do so or the licensee agrees to do so, and there is (or may be) a specific reason to do so, such as having a significant adverse impact on the aquatic environment (*Water Act*, S.55(2)).

During the planning process, consideration will be given to whether or not the final plan should include authorization for the Director to consider water allocation transfers in the planning area (*Water Act*, S.81(7)(a)).

4.0 PROJECT MANAGEMENT

Effective project management is essential for a smooth, fair and efficient process. The project management structure envisioned for the water management plan is described below. See Figure 2, Project Organizational Structure and see Appendix B, Project Structure Team Membership.

4.1 Project Structure, Phase I

The following structure will be used to manage the project:

a) Cabinet – Under the *Water Act* (11(1)), Cabinet's authorization is required if the outcome of the proposed plan is an approved water management plan[3].

b) AENV Director, Northern Region – As identified in the *Water Act* and the *Framework for Water Management Planning*, a Director will sign off the terms of reference as the Director responsible for water management in the Region. The Director will determine the most appropriate outcome of the planning process: an "approved water management plan", a "water management plan", or a "water conservation objective". Each product has its own specific authority and effect on resource management under the *Water Act*. The Director is responsible for final approval of the water management plan and for ensuring its implementation.

c) Government Coordinating Group – Consists of senior government officials from provincial departments: Alberta Environment, Alberta Sustainable Resource Development, Alberta Community Development – Parks and Protected Areas, Alberta Energy, and federally from Fisheries and Oceans Canada. Other government personnel will be identified as required to address specific issues. This Group is responsible for overall leadership, development of the terms of reference and the water management plan and, with the Watershed Committee, will provide liaison and advice to the government throughout the process. The Government Coordinating Group will also give direction to the Technical Advisory Committees.

d) Watershed (Basin Advisory) Committee – Represents local groups and stakeholder communities in the planning area: key municipalities, agriculture, First Nations, forest industry, energy industry, tourism operators, recreation/tournaments and commercial fishermen. The Committee is accountable to its constituents and is responsible for providing advice on the range of views and community values to be considered. It is responsible to support the public consultation process and make recommendations to the Government Coordinating Group and the Director on the water management plan, but it is neither a decision-making nor voting body.

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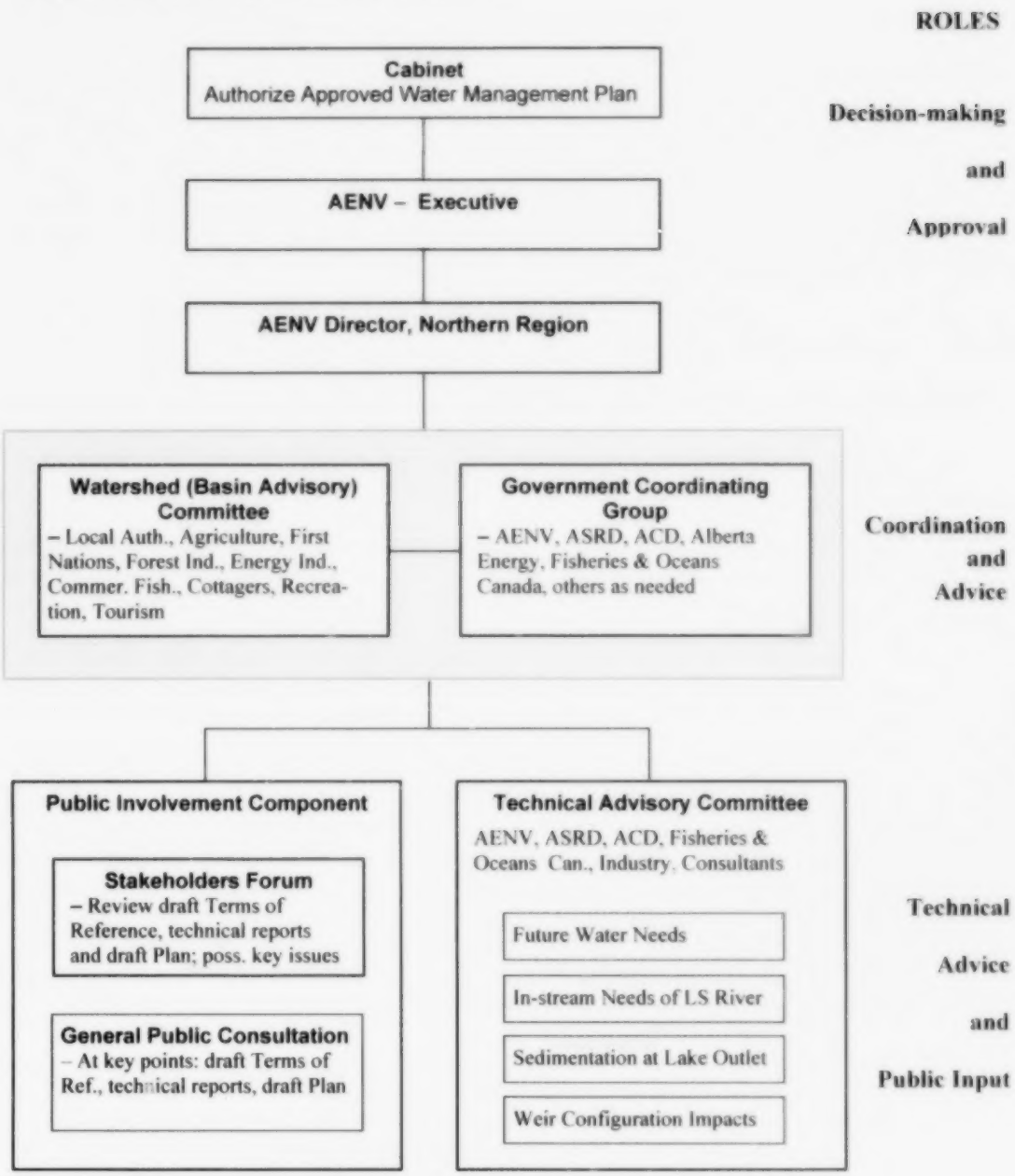
[3] Approved water management plans are required when transferring a water allocation under a license (*Water Act*, S.82) and if holding back up to 10% of that allocation is deemed in the public interest for protection of the aquatic environment (S.83).

Figure 2. Project Organizational Structure


ROLES
Cabinet
Authorize Approved Water Management Plan
Decision-making
and
Approval
AENV – Executive
AENV Director, Northern Region
Watershed (Basin Advisory) Committee
– Local Auth., Agriculture, First Nations, Forest Ind., Energy Ind., Commer. Fish., Cottagers, Recreation, Tourism
Government Coordinating Group
– AENV, ASRD, ACD, Alberta Energy, Fisheries & Oceans Canada, others as needed
Coordination
and
Advice
Public Involvement Component
Stakeholders Forum
– Review draft Terms of Reference, technical reports and draft Plan; poss. key issues
General Public Consultation
– At key points: draft Terms of Ref., technical reports, draft Plan
Technical Advisory Committee
AENV, ASRD, ACD, Fisheries & Oceans Can., Industry, Consultants
Future Water Needs
In-stream Needs of LS River
Sedimentation at Lake Outlet
Weir Configuration Impacts
Technical
Advice
and
Public Input

e) Technical Advisory Committees (TAC) – Consists of technical experts from participating agencies – professional consultants may provide specific services to assist. The committees are accountable to the Government Coordinating Group. They will review, research/study

and report as requested, and will work according to specific terms of reference. They will have individual leaders to guide development of their projects (see Appendix B).

f) Public Involvement – Critical to success of the plan, there are two arenas of public involvement, with stakeholder groups and with the general public.

- **Stakeholders Forums** will be held at key points in the process, to review documents and provide advice on key issues. They will include people with known interests or points of view, or having particular expertise.
- General public are interested individuals residing in the basin that may have a personal interest in the plan, but are not directly involved in regional water-related issues. **General public consultation** will be conducted through open houses, questionnaires and media communications.

4.2 Planning Process

The purpose of the planning process is to identify the steps required in undertaking the water management plan. There are four main steps (see Table 1, Overview of the Planning Process):

a) Setting the Stage: Plan goals, objectives, scope and deliverables are identified, and the organizational structure and managerial aspects of plan development is defined. General information required to support the technical assessment anticipated is outlined, plan development is characterized, and the implementation strategy expected is set out.

b) Plan Preparation: The focus is on data and information collection, preparation of educational material, modelling to study alternative water management scenarios, and evaluating those alternatives. From this, options will be generated and recommendations made. Work is primarily in data collection/analysis/evaluation. Results of this phase are the basis for decision-making that will be used to formulate basin water management goals and objectives. Findings and conclusions will be presented and shared with the Watershed Committee and the general public for review and comments.

c) Plan Formulation: The purpose is to develop basin water management goals and objectives, identify and evaluate solutions/alternatives, make decisions, and draft the water management plan. Work also includes public review of the draft water management plan and its adoption by the appropriate authority (defined by the *Water Act*). Phase I of the plan is to be completed by January 2005.

d) Plan Implementation, Evaluation and Monitoring: Implementation includes identifying roles, responsibilities, budget and funding, long-term monitoring needs and priorities. Plan content will need to be evaluated and monitored for its success, performance and compliance with existing legislation, policy and standards. Targets within the plan may take some time to achieve, so performance monitoring provides resource managers a means to check plan progress and confirm results. Adjustments to achieve results can be made as necessary. Lastly, a schedule for review and amendment outlines when the plan will be revisited and how appropriate adjustments will be made. Review is important to ensure the plan remains relevant and reflects current objectives.

Table 1. Overview of the Planning Process

		Planning Steps
Information	**Project Initiation** Set project scope, goals and objectives, assemble project management team and develop public consultation process	Setting The Stage
	Internal Communication Executive approval and funding	
	External Communication Partner with Watershed Committee, collaborate with Federal and Provincial Departments, communicate with the Local MLA and announce Project to the press	
	Terms of Reference Draft Terms of Reference ***~ Public review required ~*** Final Terms of Reference	
Choice	**Data and Information collection** Watershed functions, status and condition	Plan Preparation
	Synthesis and Analysis Identify data gaps, interpret findings and make recommendations	
	Draft Water Management Plan Develop basin water management goals Evaluate management alternatives Develop draft water management plan ***~ Public review required ~*** Submit final water management plan	Plan Formulation
Action	**Implementation, Evaluation and Monitoring** Develop implementation framework for monitoring, funding, roles and responsibilities, performance criteria Includes **Review and Amendment**	Implementation, Evaluation and Monitoring

Phase I of the water management plan will guide Alberta Environment's regulatory decision-making in the Lesser Slave Basins. Future phases of the water management plan will address water management issues not included in this phase.

While the planning process is necessarily sequential, some aspects can be initiated without waiting for completion of earlier components. For example, efforts will be made to increase public awareness through the preparation and communication of materials in topic areas such as:

- impacts of the Lesser Slave Lake Regulation Project on the natural (hydrological) system
- facts/issues/values associated with the consumptive uses of water in the basin
- facts/issues/values associated with the aquatic environment
- the principal concepts and terms used in water management
- the status of water availability and water quality in the basin
- the planning process
- the tools that will assist in making planning decisions

Communicating some of this information could include using audiovisual presentations, written materials and the Alberta Environment website.

4.3 Public Consultation

4.3.1 Objectives of Public Consultation

Public consultation is essential to the successful planning of the project. The public must have the opportunity to understand the current state of the resource and provide input. The goal is to create and maintain dialogue with regional stakeholders and the general public to ensure long-term viability of the proposed plan. Objectives are:

- To obtain feedback and advice from stakeholders and the public.
- To facilitate area residents' understanding of the hydrological processes of the natural system, and of previous studies undertaken in the area.
- To incorporate community values into the evaluation and planning process, in addition to the technical/scientific analysis of the proposed plan provided by water management professionals.
- To promote effective communication between water management staff, stakeholders and the general public, to provide the opportunity for mutually acceptable solutions.

Input will be accepted on all aspects of water management, but input outside the scope of the first phase of the water management plan will be evaluated for inclusion in subsequent phases.

Some residents in the Lesser Slave Lake area may be unfamiliar with aspects of the watershed, the magnitude that impact rain events can have on the lake, and how the lake responds to the natural hydrologic cycle of periodic flooding and drought. The Lesser Slave Lake Regulation Project, constructed in 1983, has altered lake water levels and river flows. In addition, the East and West Prairie Rivers and the Buffalo Bay-Horse Lakes system at the west end of the lake has been altered in an attempt to reduce flooding – this has introduced changes to the natural system. It is important to make this information available, and understood, prior to discussing or recommending modifications to the lake system.

4.3.2 Previous Public Process, Outcomes and Information

Many of the technical studies in the planning area centre on Lesser Slave Lake and River, while other studies focussed on their tributaries. To address past lake- or water-level concerns on Lesser Slave Lake, two public advisory committees were established. The first, the Lesser Slave Lake Basin Advisory Committee, reviewed recommendations for lowering lake levels that were made in the 1970s and 80s, and also oversaw the implementation of the Lesser Slave Lake Regulation Project. The committee met occasionally during the 1980s to advise government on other issues in the basin. The second committee was the Buffalo Bay–Horse Lakes Public Advisory Committee. They reviewed issues and made recommendations on water management issues in the Buffalo Bay–Horse Lakes areas. Their final recommendations are described in the report, "Buffalo Bay / Horse Lakes East / West Prairie Rivers Water Management Program" (September 1992).

Both of these public advisory committees undertook public consultation by distributing information on water management options, and holding open houses to collect public discussion and feedback. Additional open houses were held on Lesser Slave Lake levels (August 1993, December 1993) to discuss concerns about the impacts of the Regulation Project, and on issues of lake sedimentation and water quality, lake levels and regulation, future shore land development, protection of the aquatic environment and sustainability of the fishery.

Other public consultation processes undertaken in the planning area resulted in the following reports:

- Iroquois Creek Basin Study (1985)
- Frost Hills Local Integrated Resource Plan (1985)

Land clearing and on-farm drainage improvements in the early 1970s had worsened existing drainage and flooding problems, especially in the lower Iroquois Creek basin. Landowners were interviewed and a detailed study was completed. A drainage plan was produced that provided for future agricultural development in the basin and described 1:10 year level of flood protection for the project area. In the late 1980s and early 1990s, reservations were placed on Crown lands in the basin for watershed protection and to prevent further land development that could increase the potential for flooding in the lower reach of the basin.

The Frost Hills Local IRP was initiated in 1980, to resolve a conflict between a provincial government reforestation project and local demands for an expanded agricultural land base. The planning team included provincial government agencies (Energy and Natural Resources, Agriculture, Environment), public members (Lesser Slave Lake Basin Advisory Committee, Kinuso Local Land Development Committee) and consultants (Alberta Fish and Game Association, Western Stockgrowers Association, National and Provincial Parks Association of Canada, Canadian Petroleum Association and Independent Petroleum Association of Canada). Plan development included public involvement throughout. Five land use zones were created, defining development in agriculture, grazing, lakeshore conservation, stream conservation and multiple-use zones, for 11 different resources.

4.3.3 Relationship Between Public Consultation and Planning Process

Public advice and feedback on proposed goals, objectives, and actions will be required to resolve issues. The public will also review draft documents through open houses, public meetings and Alberta Environment's website. The public will be involved through:

- the Watershed Committee (stakeholder advisors) input to terms of reference and development of public involvement processes,
- public input to terms of reference,
- education and information sessions to increase public awareness of issues, and
- formal input during workshops and group presentations.

In Section 4.2 Planning Process, four phases in the process of developing the water management plan were identified: setting the stage, plan preparation, plan formulation, and plan implementation / evaluation / monitoring. The public will be consulted during this process, on components including issue identification, prioritizing, review of the draft terms of reference and review of the draft water management plan. The public will be formally invited to review materials at the draft Terms of Reference stage and the draft Water Management Plan stage.

Throughout the planning process, there will be meetings with stakeholders that focus on specific issues. Stakeholders and the general public will be involved at the following times:

Issues Identification and Issue-based Planning – Provides an opportunity for the general public to participate and become better informed of the goals, objectives and scope of the proposed water management plan.

Review of Terms of Reference – Review and comment on the project terms of reference, identify all relevant issues that should be addressed.

Review of Findings of Technical Committees – Review and comment on the findings of data collection initiatives and scientific reports.

Design of Water Management Plan, Phase I –

- Participate in developing basin water management goals and objectives.
- Participate in reviewing alternative water management options and identify alternative options for consideration.
- Review of the draft Water Management Plan, Phase I.

4.4 Public Consultation Communications Strategy

Regular communications are integral to successful planning and the creation of a publicly-valued water management plan. The communication strategy is designed to convey timely and accurate information to the public and to ease identification of community issues and concerns. The project is committed to the principles of open and visible communication that fosters trust, credibility and integrity.

The water management plan will subscribe to the principles of open communication and access to relevant information. The strategy will be developed to provide details of getting information to the public (such as through fact sheets, workshops, displays, feature stories, mail outs, newsletters, news releases, ads, presentations to groups), and receiving the public's ideas, issues and concerns (through workshops, review of planning documents at open houses or public meetings, website).

A communications plan that initiates and maintains contact with stakeholders and the general public will be used. The communications plan will continue to solicit advice and feedback from stakeholders throughout the planning process. Communications methods include:

Stakeholders Forum – A discussion between local stakeholders, the Technical Advisory Committee and the Government Coordinating Group. Stakeholders will have the opportunity to provide input and advice in the water management plan.

Informing the media – To effectively reach as wide a public as possible, press releases will be used to inform local media about the project. Project milestones and open houses will be advertised in local newspapers.

Open houses – Open houses will be held during the planning process to provide an informal forum to have the Government Coordinating Group and Technical Advisory Committee discuss issues with the general public.

Information materials – Information materials will be created as necessary and made available. This may include mail-outs, newsletters, fact sheets, feature stories and information placed on Alberta Environment's website.

4.5 Work Plan and Schedule, Phase I

Work in Phase I will be undertaken as follows (see Table 2, Tentative Work Plan), starting with 'Setting the Stage', where the project is initiated – scope, goals and objectives defined – information needs and partners identified, and the terms of reference produced. Under 'Plan Preparation', data is collected and evaluated, providing the basis for decision-making in formulating water management goals and objectives. 'Plan Formulation' is where those goals and objectives are developed, the plan is written and public review occurs. During the final component, 'Plan Implementation, Evaluation and Monitoring', the implementation framework is created, including monitoring and a schedule for review and amendment (refer to 4.2 Planning Process for additional information).

5.0 DATA COLLECTION and ANALYSIS

The water management plan requires information to be reviewed, data gaps to be defined, new data to be collected, analyzed and reported upon, or existing data to be reanalyzed in light of changed conditions. Technical committees will carry out this work. An important and potentially time-consuming project is the determination of in-stream flow needs for protection of the aquatic environment, because it is a benchmark for the determination of a water conservation objective.

5.1 In-stream Needs and Water Conservation Objectives

Defining a water conservation objective for the Lesser Slave River requires identifying the amount and quality of water necessary for protection of the natural water body or its aquatic environment, recreation, waste assimilation, management of fish and wildlife, or other uses. The economic, environmental and social values of stakeholders and the public will guide final recommendations

Table 2. Tentative Work Plan

Activity	Timeframe	Lead
a) Setting the Stage		
1. Project initiation, identify project scope, goals, objectives.	June-Sep. 2002	Gov't Coord Gr.
2. Develop preliminary draft terms of reference.	June-Sep. 2002	AENV
3. Inform local MLAs of project initiation.	Nov. 2002	AENV
4. Watershed Committee review preliminary draft T of R.	June-July 2002	Watershed Cmte
5. Outline general information needs.	Sep.02 -ongoing	AENV
6. Invite federal and provincial departments to participate. Develop partnerships with industry, municipalities.	Oct.02 - Jan.03	AENV
7. Initiate technical advisory committees.	Oct.02 -ongoing	AENV
8. Prepare detailed terms of reference for technical components of project.	Mar. 2003 - ongoing	TAC
9. Prepare educational material, presentations, fact sheets, displays, etc. for open house meetings…	Mar. 2003 - ongoing	AENV + N. Region +
10. Public meeting to review draft terms of reference.	Mar. 2003	Watershed Cmte
11. Department approval of terms of reference.	June 2003	N. Reg. Director
b) Plan Preparation		
1. Determine and evaluate in-stream needs (office method).	June 2003	TAC
2. Determine scientifically-based in-stream needs.	Aug.03-- ??	TAC
3. Determine sediment impacts on LS Lake outlet channel.	Jul.03-Mar.04	TAC
4. Assess Lesser Slave Lake Regulation Project.	↓	Watershed Cmte / TAC
5. Compile water quality information for Lesser Slave River.	↓	TAC
6. Determine current water demand/allocation & supply and estimate future water demand.	↓	
7. Model & assess weir change scenarios/impacts on local hydrology. Identify alternatives.	Mar. 2004	Northern Region/TAC
8. Focus group(s) / Public involvement to review tech. reports.	Mar.04 & on	Gov't Coord.Gr. +WatershedCmte
c) Plan Formulation: Phase I		
1. Model/evaluate water management alternatives, with public input.	Mar. 2004	Government Coord. Group and Watershed Committee
2. Draft the water management plan.	Jul. 2004	
3. Public review of draft water management plan.	Sept. 2004	
4. Submit recommended water conservation objectives (final water management plan, Phase I).	Dec. 2004	
d) Implementation, Evaluation & Monitoring		
1. Develop implementation framework for monitoring, funding, roles/responsibilities, and performance criteria…	Jan. 2005	W'shed Cmte & Gov't Coord Gr.
2. Develop schedule for review and amendment.	Jan. 2005	

for the in-stream flow needs values.

Due to the complexity of the aquatic environment, substantial time may be needed to develop a scientifically sound, defensible in-stream flow needs value. It can include winter under-ice work and may require comparative data to be collected over a couple of years. Modelling requires detailed river hydraulics and fish habitat information (to determine the relationship between flow and habitat availability for fish). Therefore, the level to which the water management plan needs to address in-stream flow needs will affect the cost and speed of plan development. Until that is determined, the work plan schedule is necessarily somewhat tentative.

5.2 Technical Studies

Below is a simple overview of the four technical tasks identified for development of the water management plan. The technical committees will define the detailed project scope necessary to address the appropriate goals and deliver their component of the plan, when they convene.

Task 1: Future Water Needs
Reference to Goals:

- *Address the current and foreseeable future water needs in the planning area.*
- *Assess whether the Lesser Slave Lake Regulation Project meets current needs.*

Outcome:

- Acceptable sustainable water allocation limits in the lake and river basins
- Potential water needs in the lake and river basins for about the next 25 years

Links: Task 2 – in-stream needs must be considered in future development scenarios.
Task 4 – weir configuration could influence water availability.

Task 2: In-stream Flow Needs for the Lesser Slave River
Reference to Goal: *Address protection of the river aquatic environment.*

Purpose: Determine water quantity, quality, physical habitat and aquatic species (to the extent necessary) as part of the strategy for addressing protection of the river aquatic environment.

Links: Task 1 – future development will impact in-stream needs.
Task 4 – river flow will be impacted by various weir configurations.

Task 3: Sedimentation in the Lesser Slave Lake Outlet Channel
Reference to Goal: *Assess the impact of sediment in the Lesser Slave Lake outlet channel.*

Purpose: Determine the effect of sediment in the outlet channel on:

- the function of the weir
- the function of the channel
- river flow regime above and below the weir, and on downstream users.

Links: Task 2 – sediment can affect aquatic habitat and in-stream flow needs.
Task 4 – weir configuration can affect sediment regime.

Task 4: Weir Configuration Impacts
Reference to Goals:

- *Address protection of the river aquatic environment.*

- *Assess the impact of sediment in the Lesser Slave Lake outlet channel.*
- *Assess whether the Lesser Slave Lake Regulation Project meets current needs.*

Outcomes from modelling various weir configurations:

- Impact on lake hydrology, river flow, aquatic ecosystems.
- Impact on land ownership, land use, vegetation, and near-shore terrestrial habitat.

Links: Task 1 – weir configuration could impact/influence ability to meet future water needs.
Task 2 – weir configuration will impact ability to deliver in-stream flows.
Task 3 – weir configuration can impact sediment management.

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7.0 APPENDICES

Appendix A:

List of Acronyms and Definitions:

AENV – Alberta Environment
ACD – Alberta Community Development
ASRD – Alberta Sustainable Resource Development
AE – Alberta Energy

Channel structure – This relates to stream erosion processes that establish and maintain natural habitats.

In-stream flow need (IFN) (or In-stream need) – The scientifically determined amount of water, flow rate or water level that is required in a river or other body of water to sustain a healthy aquatic environment or to meet human needs such as recreation, navigation, waste assimilation, or aesthetics. During part of the year (under high flows), for some components of the aquatic environment, the in-stream flow need can be less than the natural flow, while during low flows the in-stream need can be quite close to (if not the same as) the natural flow. In some circumstances, the in-stream flow need may be greater than the natural flow (*e.g.* when it is necessary to dilute waste). Currently, the aquatic environment is considered to be represented by: fish habitat, riparian vegetation, water quality (for fish), and channel structure.

Lake outlet channel – The upper region of the river below the lake, where the lake narrows.

Natural flow – The flow in rivers that would exist in the absence of any man-made impacts on or regulation of flow. For purposes of water management, natural flow is a value calculated from the recorded flows of contributing rivers, a number of factors affecting the river reaches (e.g. evaporation, channel losses, etc.), and water diversions.

Stakeholders – Identifiable groups with a recognized constituency, such as tourism/recreation, who have a stake in the outcome of the water management plan.

Traditional agriculture use – A program under the *Water Act* that allowed current users of water, where the water is used for watering animals or applying pesticides to crops, to protect their use by registering it. The priority of the registration was "grand fathered" to the date of first use based on information supplied by the registrant. Generally, the volume of water protected was up to a maximum of 6250 m^3 (5 acre-feet) per year. The program expired December 31, 2001.

Water Conservation Objective (WCO) - From the *Water Act: "water conservation objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the*

(i) protection of a natural water body or its aquatic environment, or any part of them,
(ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
(iii) management of fish or wildlife,

and may include water necessary for the rate of flow of water or water level requirements.
Only the Director can establish water conservation objectives.
The Director can issue a licence to the Government for the purpose of implementing a water conservation objective.

Appendix B:

Project Structure Team Membership

AENV Director – Regional Environmental Manager, Northern Region, Edmonton

Government Coordinating Group
AENV – Team Leader, Environmental Planning, Regional Services, Northern Region, Peace River
ASRD, Fish & Wildlife Division – Regional Fisheries Manager, North West Region, Peace River
ASRD, Public Lands Division – Rangeland Management Head, North West Region, Fairview
ACD-Parks and Protected Areas – Area Manager, Community Development, Grande Prairie
AE – Resource Planner, Land Access and Development, Resource Land Access, Oil Development, Edmonton
Fisheries and Oceans Canada – District Manager, Central and Arctic Region, Peace River

Watershed (Basin Advisory) Committee – Chair, George Keay
MD of Lesser Slave River – Denny Garratt
MD of Big Lakes – Craig Bissell
Forest and Related Industry – Gordon Sanders
First Nations – Cindy Koop
Tourism Operators/Groups – Grant Gramiak
Recreation/Tournaments – Larry Marquardt
Town of High Prairie – John Brodrick
Town of Slave Lake – Ray Stern
Agriculture – Lynn Sandquist
Oil/Gas Industry – Marshall Sloan
Commercial Fishermen Association – Murray DeAlexandra
Fisheries and Oceans Canada – Doug Lowe, Impact Assessment Biologist, Prairies Area
Provincial Government – Rod Burr, Team Leader, Environmental Planning, Regional Services

Technical Advisory Committees
Task 1: Future Water Needs
Lead – Ron Davis, Natural Resource Planner, Regional Services, Northern Region
- also a Watershed Committee representative, MD representative, Town representative, plus an economic consultant if necessary

Task 2: In-stream Needs for the Lesser Slave River
Lead – Tim Toth or with Allan Locke, Provincial In-stream Flow Needs Specialist
- also specialists in Hydrology, Fisheries, Fish Habitat, Channel Geomorphology, Water Quality, Water Quality Analyst (modeller); Regional Approvals; plus a Watershed Committee representative

Task 3: Sedimentation in the Lesser Slave Lake Outlet Channel
Lead – Rod Burr, Team Leader, Environmental Planning, Regional Services, Northern Region
- also specialists in Channel Geomorphology, River Engineering, plus a Watershed Committee representative

Task 4: Weir Configuration Impacts
Lead – Rod Burr, Team Leader, Environmental Planning, Regional Services, Northern Region
- also specialists in River Engineering, Hydrology, Hydrological Modelling, GIS Modelling, Riparian Biology, Land Use plus a Watershed Committee representative